IN THE CLAIMS:

Please cancel without prejudice claim 7.

Also kindly change claims 1 through 6, and claim 21, all to read as follows.

1. (currently amended) Apparatus for printing images on a printing medium, by construction from individual marks; said apparatus being characterized by a design value for printhead-to-printing-medium spacing (PPS), and comprising:

printheads carried on a scanning carriage next to a printing-medium position;

a single-channel optical sensor having:

plural lamps emitting substantially incoherent light,

means, including a photosensitive stage, for receiving and responding to the substantially incoherent light, and for developing therefrom a sensor output signal representing at least one difference between PPS measurements with a corresponding pair of the lamps;

said photosensitive stage being calibrated, with each of the plural lamps, at the design value of PPS; and

means for interpreting the at least one difference signal as a PPS displacement from the design PPS value, to determine actual PPS in the printer

~~a platen locating such medium;~~

~~at least one printhead marking on such medium;~~

~~a carriage holding the head;~~

~~a rod supporting the carriage for scanning motion across such medium;~~

~~a sensor, at least partially mounted to the carriage, measuring relative distances between the sensor and the platen or such medium; said sensor comprising first processor portions interpreting intensity of reflected radiation, at each of plural positions along the scanning motion respectively, as a measure of respective transmission distances from the source to the sensor via reflection from the platen or such medium; and~~

~~second microprocessor portions modifying the marking by the head to compensate for variation of the measured distances during the scanning motion~~.

2. (currently amended) The apparatus of claim 1, wherein:

the receiving and responding means comprise means for using the sensor with:

the pair of lamps in alternation to develop an a. c. signal output representing said at least one difference, and

another pair of lamps in alternation to develop another a. c. signal output representing another difference;

the interpreting means comprise means for computing a mean of the differences; and

the computing means comprise means for weighting the differences in an inverse relation to signal noise associated with each difference

~~the sensor further comprises:~~

~~a radiation source emitting radiation toward the platen or such medium;~~

~~a detector receiving source radiation reflected from the platen or such medium~~.

3. (currently amended) The apparatus of claim 1, further comprising:

means for applying a signal from the sensor to compute a profile of said PPS along said scanning, using a known correlation function;

means for measuring intensity variations of reflected radiation received on the surface along said scanning;

means for interpreting the intensity variations as directly due to attenuation in travel of the radiation toward the printing-medium position and back;

means for retaining the interpreted intensity-variation information for use in compensating imperfection; and

means for adjusting marking positions of the printheads, based on the computed PPS profile

~~wherein:~~

~~the radiation source emits substantially incoherent radiation; and~~

~~the sensor is a single-channel device~~.

4. (currently amended) A method of compensating operation of a printer, which printer has printheads carried on a scanning carriage next to a printing-medium position; said method comprising the steps of:

scanning a surface substantially at the printing-medium position using a single-channel, plural-lamp optical sensor operating with substantially incoherent light;

defining a design value for printhead-to-printing-medium spacing in the printer;

calibrating the sensor, with each of plural lamps associated with the sensor, respectively, at the design PPS value;

installing the calibrated sensor in the printer;

operating the sensor, with each of the plural lamps respectively, in such a way as to develop a sensor output signal representing at least one difference between PPS measurements with a corresponding pair of the lamps; and

interpreting the at least one difference signal as a PPS displacement from the design PPS value, to determine actual PPS in the printer

~~The apparatus of claim 1, wherein:~~

~~the sensor comprises means for measuring the relative distances without printing on such medium~~.

5. (currently amended) The method ~~apparatus~~ of claim 4 [[1]], wherein:

the operating step comprises using the sensor with:

the pair of lamps in alternation to develop an a. c. signal output representing said at least one difference; and

another pair of lamps in alternation to develop another a. c. signal output representing another difference;

the interpreting step comprises computing a mean of the differences; and

the computing comprises weighting the differences in an inverse relation to signal noise associated with each difference

~~the sensor comprises means for measuring the relative distances at multiple positions substantially along the length of the rod~~.

6. (currently amended) The method ~~apparatus~~ of claim 4, further comprising the steps of:

applying a signal from the sensor to compute a profile of said PPS along said scanning, using a known correlation function;

measuring intensity variations of reflected radiation received on the surface along said scanning;

interpreting the intensity variations as directly due to attenuation in travel of the radiation toward the printing-medium position and back;

retaining the interpreted intensity-variation information for use in compensating imperfection; and

adjusting marking positions of the printheads, based on the computed PPS profile

~~1, wherein the modifying means comprise:~~

~~memory storing the respective transmission-distance measures for the plural positions; and~~

~~third microprocessor portions for retrieving the transmission-distance measures for the plural positions, to use in compensation, by the second portions, for corresponding positions along the rod respectively~~.

7. (canceled)

8. (original) A method of compensating operation of a printer, which printer has printheads carried on a scanning carriage next to a printing-medium position; said method comprising the steps of:

scanning a surface substantially at the printing-medium position using a single-channel optical sensor operating with substantially incoherent light;

applying a signal from the sensor to compute a printhead-to-printing-medium spacing (PPS) profile along said scanning, using a known correlation function;

adjusting marking positions of the printheads, based on the computed PPS profile.

9. (original) The method of claim 8:

further comprising the step of loading unprinted, bare printing medium into the printer; and

wherein the surface-scanning step comprises scanning the unprinted, bare medium.

10. (original) A method of calibrating a printer, which printer has printheads carried on a scanning carriage next to a printing-medium position, and has a carriage support-and-guide rod subject to imperfection in geometrical relation with the printing-medium position; said method comprising the steps of:

projecting radiation from the carriage toward the printing-medium position for reflection back toward the carriage, at plural locations of the carriage along the rod;

measuring intensity variations of reflected radiation received on the carriage at the plural locations;

interpreting the intensity variations as directly due to attenuation in travel of the radiation through the distance from the carriage toward the printing-medium position and back to the carriage; and

retaining the interpreted intensity-variation information for use in compensating the imperfection.

11. (original) The method of claim 10, wherein:

the projecting step comprises projecting the radiation to a printing medium disposed at the printing-medium position;

the measuring step comprises receiving the radiation reflected from the printing medium; and

the attenuation is due to scattering of the radiation in the reflection, and divergence of the radiation during said travel.

12. (original) The method of claim 11, wherein, during said projecting and receiving :

substantially nothing has been printed on the printing medium;

whereby the printing medium is substantially bare printing medium.

13. (original) The method of claim 10, wherein:

the projecting step comprises projecting the radiation to a platen disposed substantially at the printing-medium position; and

the measuring step comprises receiving the radiation reflected from the platen.

14. (original) The method of claim 13, wherein:

the interpreting step comprises making a distance allowance for thickness of printing medium absent from the platen.

15. (original) The method of claim 10, wherein:

the interpreting step comprises referring to a previously determined correlation function between intensity variation information and printhead-to-printing-medium spacing.

16. (original) A method of determining printhead-to-printing-medium spacing (PPS) in an incremental printer, using a plural-lamp sensor; said method comprising the steps of:

defining a design value for PPS in the printer;

calibrating the sensor, with each lamp of the plurality respectively, at the design PPS value;

installing the calibrated sensor in the printer;

operating the sensor, with each lamp of the plurality respectively, in such a way as to develop a sensor output signal representing at least one difference between PPS measurements with a corresponding pair of the lamps; and

interpreting the at least one difference signal as a PPS displacement from the design PPS value, to determine actual PPS in the printer.

17. (original) The method of claim 16, wherein the operating step comprises:

using the sensor with the pair of lamps in alternation to develop an a. c. signal output representing said at least one difference.

18. (original) The method of claim 17, wherein:

the operating step further comprises using the sensor with another pair of lamps in alternation to develop another a. c. signal output representing another difference; and

the interpreting step comprises computing a mean of the differences.

19. (original) The method of claim 18, wherein:

the computing comprises weighting the differences in an inverse relation to signal noise associated with each difference.

20. (original) The method of claim 19, wherein:

the computing comprises finding said mean as a root-mean-square of the weighted differences.

21. (currently amended) Apparatus for printing an image on a printing medium, by construction from individual marks; said apparatus comprising:

a platen locating such medium;

an array of printing elements marking on such medium, said array being of length at least as great as width of such image;

an advance mechanism providing relative motion of such medium and the array, substantially at right angles to the array length;

a carriage scanning lengthwise along the array;

a sensor, at least partially mounted to the carriage, measuring relative distances between the sensor and the platen or such medium; said sensor comprising first processor portions interpreting intensity of reflected radiation, at each of plural positions along the scanning motion respectively, as a measure of respective transmission distances from a [[the]] source to the sensor via reflection from the platen or such medium; and

second microprocessor portions modifying the marking by the array to compensate for variation of the measured distances along the array length.

22. (original) The apparatus of claim 21, wherein:

the carriage carries exclusively the sensor or portions thereof, not the array.